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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/558,158	11/23/2005	Sciji Hidaka	M1071.1945	1908
32172 7590 09/21/2007 DICKSTEIN SHAPIRO LLP 1177 AVENUE OF THE AMERICAS (6TH AVENUE) NEW YORK, NY 10036-2714			EXAMINER HAMILL, ERIC R	
			ART UNIT 2809	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

TH

Office Action Summary

Application No.

10/558,158

Applicant(s)

HIDAKA ET AL.

Examiner

Eric R. Hamill

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11-23-05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 7 is objected to because of the following informalities: Missing a colon after "comprising."

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 7 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 7, the phrase "wherein a greatest straight line dimension of the overlapping non-conductive areas of the first and third layers perpendicular to the lamination direction is different than the distance between the overlapping non-conductive areas perpendicular to the lamination direction" is unclear because it is hard to distinguish the difference between the "overlapping non-conductive areas of the first and third layers" from the "overlapping non-conductive areas." Claim 17 has nearly the same unclear language.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 7, 14-18, and 24-26 are being rejected under 35 U.S.C. 102(e) as being anticipated by Tsukamoto (Publication No. 2002/0109562 A1).

For claim 7, Tsukamoto teaches: a stepped impedance structured resonator (See [0076] stating this can be used as a bandpass filter) comprising:

a laminate (See Fig. 1B, electrodes 5a-5d are laminated to the dielectric block) having superposed set of first, second and third layers (See Fig.1B, capacitors 7a-7c are made up of a superposed, or sandwiched, set of three layers; See also [0040-0042].);

the second layer which is disposed between the first and third layers being a dielectric (Fig 1B, elements 7a-7c point to the dielectric layer); each of the first and third layers being conductive layers (Fig. 1B, elements 5a-5d) having spaced first and second non-conductive areas with a first conductive area (Fig. 1B, elements 2b and 2c) therebetween;

at least a portion of the first non-conductive areas (Fig. 1A, elements 2b) of the first and third layers overlapping in the lamination direction (Fig. 1A shows non-conductive areas, elements 2a-2d overlapping in lamination, i.e. side, direction) and at least a portion of the second non-conductive areas (Fig. 1A, elements 2c) of the first and third layers overlapping in a lamination direction (Fig. 1A shows non-conductive

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areas, elements 2a-2d overlapping in lamination, i.e. side, direction) to thereby form inductive areas;

and at least a portion of the first conductive areas (Fig. 1B, element 7b) of the first and third layers overlapping in the lamination direction to thereby form a capacitive area (Fig. 1B, capacitor 7b is overlapping in the lamination/side direction);

wherein a greatest straight line dimension of the overlapping non-conductive areas of the first and third layers (Fig. 6, elements 2a, 2b) perpendicular to the lamination direction is different than the distance between the overlapping non-conductive areas (Fig. 6, element 2d) perpendicular to the lamination direction.

For claim 14, Tsukamoto further discloses a stepped impedance structured resonator wherein each of the first and third layers have a third non-conductive area (Fig 3A, element 2c) which is spaced from the first non-conductive area (Fig. 3A, element 2a) with a second conductive area (Fig. 3A, element 2b) therebetween; at least a portion of the third non-conductive areas (Fig 3A, element 2c) of the first and third layers overlapping in the lamination direction (Fig. 3A), and at least a portion of the second conductive areas (Fig. 3A, elements 7a-7c) of the first and third layers overlapping in the lamination direction (In Fig. 3A, elements 7a-7c are overlapping as viewed from the side/lamination direction).

For claim 15, Tsukamoto further discloses the stepped impedance structured resonator wherein the overlapping non-conductive areas are circular (Fig. 3A, elements 2a-2c).

For claim 16, Tsukamoto further discloses the stepped impedance structured resonator wherein the shape of the first overlapping non-conductive areas of the first and third layers perpendicular to lamination direction are different [0072].

For claim 17, Tsukamoto further discloses the stepped impedance structured resonator wherein a greatest straight line dimension of the overlapping non-conductive areas of the first and third layers (Fig. 6, elements 2a, 2b) perpendicular to the lamination direction is different than the distance between the overlapping non-conductive areas (Fig. 6, element 2d) perpendicular to the lamination direction.

For claim 18, Tsukamoto further discloses the stepped impedance structured resonator wherein a surface of the third layer (Fig. 1B, elements 5d or 5c) is disposed on a surface of a dielectric substrate (Fig. 1B, element 1).

For claim 24, Tsukamoto further discloses a filter comprising a stepped impedance structured resonator having signal input/output means (Fig. 1, elements 6a and 6b) coupled thereto.

For claim 25, Tsukamoto further discloses a communication apparatus comprising a filter coupled to an antenna (Fig 7, see also [0075-0076]).

For claim 26, Tsukamoto further discloses communication apparatus comprising a stepped impedance structured resonator coupled to an antenna (Fig 7, see also [0075-0076]).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 8-13, and 21-23 are being rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukamoto (Publication No. 2002/0109562 A1) in view of Katho (Patent Number 5,040,092).

Regarding Claim 8, Tsukamoto teaches all of the limitations of claim 7 above. Tsukamoto fails to teach a stepped impedance resonator filter wherein the laminate contains additional layers disposed to form at least one additional superposed set of said first, second and third layers.

Katho teaches a laminate containing additional layers (Fig. 5, shows 4 additional layers) disposed to form at least one additional superposed set of said first, second and third layers (Fig. 5).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have made Tsukamoto's filter wherein the laminate contains additional layers disposed to form at least one additional superposed set of said first, second and third layers because the sole function Tsukamoto's overlapping electrodes with a dielectric sandwiched between (Fig. 3B 7a-7c) is to provide coupling capacitance between resonators. Therefore, one of ordinary skill in the art would have recognized that other well known capacitors, such as Katho's multilayer capacitor, would replace Tsukamoto's one layer capacitors since Katho teaches that multilayer capacitors have superior Q characteristics in the high frequency band (Column 1, lines 10-12). In addition, Katho's capacitor would achieve the predictable result of providing coupling between resonators.

Regarding claim 9, Katho further teaches wherein one of the layers is a conductive layer (Fig 1, element 4) in two of the sets in the laminate (Column 2, lines 50-55).

Regarding claim 10, Katho further teaches wherein at least one of a dielectric constant and a thickness of the second layer in two of the sets are different (Fig 1, shows different dielectric thicknesses labeled a and b).

Regarding claim 11, Katho further teaches the stepped impedance structured resonator wherein a thickness of the second layer in the set disposed at an outermost

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side in the lamination direction (Fig. 6, element 5) is greater than the thickness of the second layer (Fig. 6, element 8) of another set.

Regarding claim 12, Katho further teaches a stepped impedance structured resonator wherein a thickness of the second layer in the sets disposed at both outermost sides (Fig. 6, element 5) of the laminate in the lamination direction is greater than the thickness of the second layer (Fig. 6, element 8) of the other sets.

Regarding claim 13, Katho further teaches a stepped impedance structured resonator wherein a thickness of the second layer in the sets becomes progressively greater from the central-most set (Fig. 6, element 5) toward an outermost side (Fig. 6, element 5) of the laminate in the lamination direction.

Regarding claim 21, Tsukamoto further discloses a stepped impedance structured resonator of claim 10 having signal input/output means (Fig. 1, elements 6a and 6b) coupled thereto.

Regarding claim 22, Tsukamoto further discloses a communication apparatus comprising a filter of claim 21 coupled to an antenna (Fig 7, see also [0075-0076]).

Regarding claim 23, Tsukamoto further discloses a communication apparatus comprising a stepped impedance structured resonator of claim 10 coupled to an antenna (Fig 7, see also [0075-0076]).

8. Claims 19 and 20 are being rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukamoto (Publication No. 2002/0109562 A1) in view of Chun (Patent Number 6,400,239 B1)

Regarding Claim 19, Tsukamoto teaches all of the limitations of claim 18 above. Tsukamoto fails to teach a stepped impedance structured resonator wherein a shielding electrode is disposed on at least one outermost surface of the dielectric substrate on which the third layer is disposed.

Chun teaches stepped impedance structured resonator wherein a shielding electrode (Column 2, Lines 55-56) is disposed on at least one outermost surface of the dielectric substrate (Column 2, Lines 46-47) on which the third layer is disposed (Fig. 2, elements 160 and 170).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have made Tsukamoto's stepped impedance structured resonator wherein a shielding electrode is disposed on at least one outermost surface of the dielectric substrate on which the third layer is disposed, since Chun suggests that a shield is necessary for electromagnetic interference suppression (Column 2, Lines 37-38) and to improve the resonant filter's bandpass characteristics. (Column 2, Lines 43-44)

Regarding claim 20, Chun further discloses a stepped impedance structured resonator of claim 19, wherein the first layer (Fig. 2, element 150) is covered by conductive cap (Fig. 2, element 200).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hino (U.S. Patent Number 5,831,495) and Ishizaki (U.S. Patent Number 5,479,141) both disclose electrode shielding for dielectric filters.

10. Any response to this Office Action should be **faxed** to (571) 273-8300 or **mailed** to:

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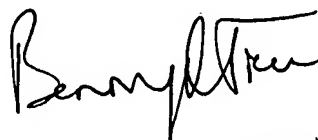
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Hamill, whose telephone number is (571) 270-1802. The examiner can normally be reached Mon-Fri from 7:30-5:00 p.m. eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benny Q. Tieu, can be reached at (571) 272-7490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have question on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eric Hamill

Patent Examiner Art Unit 2809


BENNY Q. TIEU
SPE/TRAINER